Work Zone Senior Working Group
Jack Kay, Chair
9 ViaCorte
Orinda, CA 94563

October 5, 2000

Dr. Christine Johnson, Program Manager
Operations Core Business Unit
Federal Highway Administration
US Department of Transportation
Washington, D.C.

Dear Dr. Johnson,

Thank you for giving us the opportunity to consider the important issue of work zone mobility and safety. We recognize the value of our nation's surface transportation infrastructure and we support your commitment to making our national highway system the safest, most efficient system possible. We appreciate how important effective planning and execution of highway construction and maintenance projects is to maintaining the mobility and safety needed to support our nation's economy and other critical interests.

Attached please find the minutes from our initial working group meeting held August 23-24, 2000 in Alexandria, VA. Even with relatively short notice, most of the Work Zone Senior Work Group members who agreed to serve were able to attend. Additionally, we were pleased that Tony Kane was able to join us for most of our discussion on the first day. Mr. Kane assured us of his personal interest in work zone mobility and safety and we appreciate his support. We know that you are equally supportive and would have attended if you possibly could have. In your absence, Shelley Row provided an excellent overview of FHWA priorities, vision, and expectations for the Working Group.

Working Group members are aware of a number of current programs emphasizing improvements in work zone mobility and safety and much of our discussion centered on members' experience and knowledge. We are encouraged by what FHWA is doing in this area and were pleased to hear reports from your staff and other FHWA personnel on these efforts. With this background, the committee looked for opportunities where additional emphasis or effort might complement, expand, or accelerate current programs. We also began the process of developing a comprehensive vision statement for work zone mobility and safety and we nominated several measures of success for your consideration. An initial thought for the national goal statement is: *Maximize life cycle mobility and safety related to work zone activities, per dollar invested in such activities.* We recognize that this is an evolving task and we will develop these initial ideas more completely over the next several months so that we can offer a more formal recommendation after our next meeting.

Working Group members spent considerable time reviewing innovations and suggesting strategies for improving work zone mobility and safety. After reviewing and discussing ideas, we grouped them into categories to assist in further analysis. The entire list is included in the meeting minutes but we have summarized the major points below:

BASICS

- Communication (two way) – the need for education/training/outreach, including setting expectations, to transportation agencies and staff, the general public, and key political leadership
- Performance measures for mobility, safety, and cost, including exposure levels

CONSTRUCTION AND MAINTENANCE

- A life cycle view – extend the mean time between reconstruction/repair activities (including coordinating utility work with road construction)
- Dramatically reduce construction/maintenance times (mean time to reconstruct/repair)

SAFETY

- Continuous review of work zone design and management by work zone safety specialists
- Pre-certification of construction contractors in work zone safety management

PLANNING

- Coordination across agencies, projects, and time
- Consideration of work zone implications throughout the project life cycle (planning, design, construction/maintenance, operations)

MOBILITY

- Consideration of mobility over the life cycle (before, during, and after work zone) and corridor-wide and multi-modal
- Availability of useful (timely, appropriate to media/message) and reliable information to travelers and operating agencies
- Use of ITS technologies to measure performance, inform travelers and other interested parties, and manage traffic in and around work zones

Several recurring themes during our discussion suggest some areas FHWA may wish to pursue further. Some of these themes reinforce the suggestions cited above:

- *Develop goals and objectives and associated success indicators and metrics* – Success indicators and metrics are essential for measuring progress toward achieving objectives
- *Balance mobility and safety issues* – ensure that both safety and mobility are considered when planning and executing construction and maintenance projects
- *Classify projects* – look for "high payoff" projects and treat them differently than smaller projects where innovative planning and management approaches yield fewer benefits
- *Recognize both strategic and tactical issues and approaches* – Consider approaches that can eliminate the need for future work zones or lengthen the time between work zones as well as approaches that minimize the duration or congestion associated with work zones
- *Adopt a life cycle perspective* – Consider all stages from planning through construction and operations/maintenance while recognizing the need for "short term" perspective on some political, public outreach, and funding issues.
- *Conduct ongoing constructability and maintainability reviews* – Consider constructability issues, including specific work zone implications, throughout the project life and ensure the improvement designs are maintainable with minimal affect on mobility
- *Collect exposure and delay data* – Collect work zone exposure data to improve safety management; collect delay data to evaluate mobility options
- *Develop analytical processes that consider life cycle* – Develop tools that help decision makers understand life cycle implications of design, construction, and maintenance options
- *Educate and train agency staffs on life cycle analysis and planning processes* – Expand the perspectives of planning and operating agencies based on life cycle cost and benefits

Finally, the Working Group offers several comments related to immediate actions that we believe can be done with available resources and within current programs. These actions are:

1. Accelerate the SWAT program and include consideration for collecting public perception data during data collection efforts.
2. Work closely with AASHTO and TRB to ensure wide distribution of the recently completed report on the European Motorist Delay Scanning Tour.
3. Validate Work Zone Best Practices through peer review and available documentation and data to ensure "best practices" rather than "state-of-the-practice".
4. Initiate an FHWA research program to establish success indicators, metrics, and "exposure" indicators for work zone mobility and safety.

We believe the Work Zone Senior Working Group can contribute to FHWA's work zone mobility and safety program. We have agreed to meet again in March 2001 and will be working with you and your staff to prepare for that meeting. Please feel free to call me if you would like to discuss the Senior Working Group activities further or have suggestions that might make our work more productive.

Sincerely,

Jack Kay
Work Zone Senior Working Group Chair

Cc: T. Kane, V. Schimoller, C. Burbank, D. Judicky, B. Wright, A. Hamilton
Work Zone Senior Working Group
Work Zone Mobility and Safety Product Team

Enclosure: August 23-24, 2000 Work Zone Senior Working Group Meeting Summary

Work Zone Senior Working Group

Meeting Summary
August 23-24, 2000

Background

The first meeting of the Working Zone Senior Working Group was held August 23-24, 2000 at the Hilton Crystal City in Arlington, VA. A group of leaders with broad expertise across many aspects of the highway community was invited by the Federal Highway Administration (FHWA) to help carve a path for continuous quality improvements in work zone operations. The Senior Working Group participant list is included as *Attachment A.*

Introduction

Shelley Row, Director of the Office of Transportation Operations in the FHWA Operations Core Business Unit (CBU) and Team Advisor for the FHWA Mobility and Safety Product Team, opened the meeting by welcoming the Working Group members and assuring them that work zone safety and mobility are important issues for FHWA. She told the members that FHWA needs their brainpower to set a course for achieving the goal of minimizing delays and crashes in work zones. She introduced the Working Group Chairperson, Jack Kay, former CEO of JHK and Associates. Kay encouraged active involvement by Working Group members and said the Working Group will discuss the entire concept of work zone operations and management, "not just cones and signs." He noted that the Senior Working Group is *not* an official Federal Advisory Committee subject to the provisions of the Federal Advisory Committee Act since they are participating as experts on their own behalf and not representing specific organizations or interest groups.

Tony Kane, FHWA Executive Director, also welcomed participants and thanked them for being a part of the Senior Working Group. He noted that citizens want reduced construction and repair time in work zones, and less frequent work zones achieved through the use of longer lasting materials. He noted that the Mobility and Safety Product team cuts across FHWA's CBUs and was formed as a result of FHWA's reorganization. FHWA has a goal of 20 percent reductions in fatalities and delays in work zones over a 10-year period. He said innovations in contracting and construction techniques, and public information will help meet this goal. The Senior Working Group can help FHWA set the national goal and vision by making suggestions on mobility and safety in the work zone. Kane also mentioned the difficulties in tracking and reporting since the definition of a work zone varies from state to state and there is no real measure of exposure.

FHWA Vision for the Senior Working Group

Row said that she has a dream that involves the following:

- No delays or crashes in work zones;
- Where highway workers are not risking lives just doing their jobs;
- Where travelers aren't injured or killed going through work zones;
- Where travelers are not frustrated by delays;
- Where businesses don't experience loss of income because suppliers, employees and customers are delayed; and
- Where roads are maintained and upgraded in a way with minimal delay to travelers.

She outlined some results of a 1995 NQI (National Quality initiative) survey that said only 29 percent of respondents were satisfied with traffic flow through work zones. She also noted that the top three issues of concern to the public in a recent FHWA survey were related to work zones. Row noted that there is a compelling need to address work zones. The increasing number of construction projects has lead to more congestion and delay and thus frustration on the part of the public.

Row said that with more construction, more congestion, and more safety concerns in work zones there is an opportunity to:

- Improve construction materials and processes;
- Increase the use of technology;
- Increase acceptance of innovative processes; and
- Improve the delivery of transportation information to the public.

Response to the FHWA Vision for the Senior Working Group

What is the vision? What are we looking for from this group? What is the goal? How do we achieve it? What are the measures for safety, construction and operations? Row asked these questions and comments included:

- Need to gather data to assess exposure;
- Need to focus on why accidents are occurring;
- Need to address the issue of enforcement;
- Need to educate the public better (including making sure they know that work zones are necessary and a reality);
- Need to manage projects better and agencies need to coordinate work better so they do not create a work zone multiple times at a site in a short period; and
- Should consider the full universe of work zones (planned roadway improvements, maintenance – planned or unplanned, disasters).

Where does this work fit into the agency's plan for reauthorization? We are talking about influencing more through knowledge and practices than through regulations, said Kane. One vehicle for building advocacy for reauthorization is using a work group on safety and operations, said Denny Judyki, FHWA Program Manager. He pointed out that there are deliberations on reauthorization for technology programs. He said a TRB workgroup is starting an extensive program to gather information about potential areas of transportation research similar to the SHRP initiative. Working Group Chairman Kay said TRB is being tasked with defining F-SHRP. The Working Group could formulate some of the issues that should be looked at through F-SHRP.

Some participants raised a concern about having a goal of "no delays and no fatalities" since this is unrealistic. Row indicated that she would appreciate comments and suggestions on a national goal from the senior working group.

Work Zone Mobility and Safety Issues

Discussion was sparked by the 1998 statistic of 772 people killed in work zone crashes. Dave Willis, President of AAA, said that the statistics need to be put in perspective because construction companies are doing a good job when it comes to safety. He said that workers are not the majority of people being killed but drivers and especially truckers. Ted Scott said that his industry is anticipating adding 100,000 big trucks per year over the next 10 years to the road, so statistics for truckers will increase. Scott asked about a 1997 statistic that reported a dip in fatalities. Janet Coleman with FHWA Safety Core Business Unit said that there was a change that year in the reporting requirements. The way crashes are reported on a form can affect the outcome of statistics. She said that work zone definitions differ from state to state but Mike Robinson is

working on new work zone definitions for the MUTCD. Coleman added that the objective of the Safety Core Business Unit is to improve highway safety.

Secretary of Transportation Rodney Slater has set an overall goal of reducing truck and passenger fatalities by 50 percent. According to 1998 statistics, highway fatalities accounted for 95 percent of all transportation related fatalities. To achieve the goals to reduce the fatalities the FHWA has come up with several areas of focus, including:

- Single vehicle run-off-the-road crashes;
- Speed related fatalities;
- Pedestrian and bicycle related crashes; and
- Intersections and red light running.

Work zone fatalities accounted for about two percent of all highway fatalities and thus are not a focus area.

The group discussed making a presentation at the AASHTO annual meeting in December to address several safety issues including making safety a bid item so that it is adequately considered. Row said that AASHTO is aware of the Work Zone Senior Working Group.

Other discussions included:

- Addressing human factors, including the needs of older drivers;
- Educating drivers about what is going on in the work zone;
- Getting information out to smaller levels of government – tribal governments - and to LTAPs;
- Looking at hourly lane counts to establish traffic plans; and
- The use of state troopers in work zones for enforcement and deterrence.

Overview of FHWA Work Zone Program/Activities

Phil Ditzler, FHWA Operations CBU and Team Leader for the Mobility and Safety Product Team, began a session of presentations to update the Senior Working Group on the Product Team's programs. These programs include:

- *Technology Scan/Demo* - FHWA is conducting a technology scan to identify new and emerging technologies applicable to work zones and to showcase them. These are practices that will have an impact on delay and safety and range from intrusion alarms in work zones to lane closure policies. Several of these technologies will be selected to be evaluated through demonstrations. These evaluations will be posted on a website.

- *Best Practices Guidebook*-This book was produced based on a 1998 scanning tour of 26 states. This guidebook describes the state-of-the practice as well as specific best practices.

  Some Working Group members suggested that the Guidebook should contain more data/ documentation on the practices (e.g., there was no evaluation of the practices). One Working Group member described it more as an inventory of practices than a collection of best practices. One member noted that it is hard to determine/establish cause and effect relationships so using data to assess the specific effects of an action is difficult. One member endorsed the Guidebook as a valuable tool and indicated that he had already received request for the guidebook from his organization's members who are engaged in work zone activities on a regular basis. The Working Group recommended that the data and best practices be tracked and quantified.

- Mike Robinson, FHWA Safety CBU, gave a brief overview of FHWA's *National Work Zone Safety Awareness Week*. Work Zone Safety Awareness Week was celebrated nationwide this past April to bring attention to the safety and mobility issues in work zones. This past year the week focused on safety, but for 2001 the week will focus on safety and mobility and will be held April 9-13. Some Working Group members thought the week should cover safety alone, although one participant noted that the event would draw more interest by focusing on both and would therefore could educate more people about safety

issues. One member suggested that FHWA measure the effectiveness of the Awareness Week, perhaps by looking at the number of newspapers that ran editorials related to the Awareness Week.

- Jerry Blanding, FHWA Operations CBU, updated the Working Group on three efforts. The *Model Work Zone Traffic Management Program and Self Evaluation Guide* is a standard assessment of each state's work zone program. FHWA has a goal that 35 states will have completed self evaluations by the end of this fiscal year. He also discussed the *New Driver Education Program*, which is a joint effort with NHTSA and involves the development and implementation of a program to educate new drivers on work zone concerns. Blanding also mentioned that FHWA will be conducting a research project to identify processes for reducing highway construction project times, focusing on the materials side of the process.
- John Harding, FHWA and former leader of the *Strategic Work Zone Analysis Tool (SWAT)* program, provided an overview of the program. He explained that FHWA plans for SWAT to encompass a work zone delay estimation tool, a cost analysis tool, an expert system, a simulations model, and data collection to validate the tools. He noted that FHWA hopes the tools that are developed can be used at the MPO level. One member noted to ensure that MPOs are likely to use the tools, FHWA should work with the Tech Committee of AMPO. Harding noted that the work zone delay estimation tool, called QuickZone, is currently under development and a Beta version is available.

  QuickZone is an analytical tool/software application, being developed by Mitretek Systems, for analyzing data and producing delay profiles in work zones. Mitretek staff members James Larkin and Karl Wunderlich explained the tool to the Working Group and gave a demonstration.

  Many Senior Working Group members said that they thought the QuickZone software and the other tools would be helpful and useful, and suggested that the production of these tools be accelerated.

Kay suggested that the Working Group be briefed on the outcome of these efforts at the next meeting.

Innovations

The group discussed several innovations in work zones including:

- Video cameras for monitoring traffic
- Advanced warning notification
- Road safety audits
- Transmission of road conditions on a large screen like a jumbo-tron
- New guidelines on the maximum length of work zones
- Automated enforcement
- Photo-radar signs
- Safety pre-qualifications for contractors
- Construction technology that promotes schedule management
- Radio notification of traffic (Germany example cited)
- Single project manager from start to finish
- Increased public education and outreach (on project status/progress and schedule, alternate routes)
- Measure and track schedule performance (e.g., shorten project times by reducing the slack built into schedules, establish targets and increase commitments to project schedules)
- Develop "Schedule Duration Advisor" for guidance on ambitious but achievable durations (productivity rate database with duration drivers)
- Use of total road closures for construction work
- Formalize classes of projects and have a menu of approaches for each class (e.g., exploit design-build fast-track contracting for projects with high user costs and emergency projects)
- Exploit A+B contracting
- Rigorously analyze multiple Traffic Control Plans (use as a schedule lever)
- Formalize constructability review efforts to specifically include work zone impact issues
- Increase the size of liquidated damages and enforce it (give "teeth" to user costs)

- Exploit linear scheduling method where appropriate
- Develop and exploit a "lessons learned" system to share information so that advancements and successes are used/repeated
- Increase use of task automation and integration technologies
- Emphasize life cycle costing and construction impacts to more thoroughly consider elements such as longer lasting infrastructure and road user costs.

Work Zone Threats and Opportunities

The Working Group discussed threats to and opportunities for improved safety and mobility in the work zone area. The threats and opportunities mentioned by the participants could be classified into the general categories of construction, mobility, planning, safety, and basics and are organized into those categories below:

Construction

18(O)	Use long-life materials to increase life of infrastructure investment
19(O)	Eliminate a "cycle" by "doing it right the first time" and use rapid construction methods and materials
21(O)	Design roadways to allow maintaining all lanes during reconstruction (e.g., shoulder lanes, full width bridges)
33(O)	Use of linear scheduling for construction projects
36(O)	Dramatically reducing construction times
37(O)	Modular construction techniques (e.g., pre-cast bridge girders)
38(O)	Facility closure for rapid construction
39(O)	Improved lighting in work zones
17(T)	Investment required to reconstruct infrastructure with long-life materials

Mobility

7(O)	Mode shift to transit to reduce work zone traffic
11(O)	Provide "early" information about downstream conditions (work zones, accidents/ incidents, weather, rest/ parking areas); provide in cab to commercial vehicle drivers
26(O)	Broader use of simple ITS applications in work zone
34(O)	Use pricing to help manage travel demand in work zones
43(O)	Traveler information -- use technology to provide to travelers
44(O)	Better schedule control combined with TDM -- improved mobility in region
47(O)	Get pictures about traffic conditions in work zones to travelers
52(O)	Real-time work zone delay information to contractor via PTMS, etc
53(O)	Increased use of moveable barriers (and other flexible work zone approaches)
55(O)	Leverage information technology to facilitate use of traveler information by private sector
4(T)	Public resistance to incentive contracts
6(T)	Lack of credibility in traffic information

Planning

8(O)	Get players (transit, TDM) together to plan TCP/TMP
35(O)	Organizational/ institutional continuity for construction throughout project life
41(O)	Use construction funds to improve alternate routes prior to construction
45(O)	Better coordination -- across agencies, projects, and time
50(O)	Set maximum length of work zone
42(O/T)	Funding and cash flow
9(T)	Lack of integration (organizational) to plan/manage work zone operations
10(T)	Need for coordination of projects in TIP/STIP to consider impacts on traffic
23(T)	Regulatory actions that do not consider effects on work zone operations (e.g., noise restrictions, hours of service rules, work time restrictions)
31(T)	Credibility of user costs and their use in analysis
32(T)	Managing utility projects

Safety

2(O)	Separate large and small vehicles in work zones (e.g., PA turnpike)
3(O)	Use automated speed warning and enforcement in work zones (e.g., video cameras)
14(O)	Special treatment of work zone violations (e.g., information on work zone accidents to violators)
16(O)	Install rumble strips in approach to work zone in high-speed areas
27(O)	Improved lane drop procedures (merging traffic)
1(T)	Mixed vehicles in constricted work zone
12(T)	Broadening focus in work zone program -- loss of focus on safety
48(T)	Getting work zone information to drowsy drivers

Basics

15(O)	Educate public about the reality of work zones -- especially outreach to young people
22(O)	Partnerships to focus attention on work zone issues (ARTBA, ATSSA, OSHA, and DOT)
24(O)	Communicate to public about needs, concerns, successes to garner public support for projects -- get broad involvement
30(O)	Inform/train engineers/designers about work zone management (DOTs, design consultants, contractors)
46(O)	Better performance measures
49(O)	Independent audits of work zone operations
51(O)	Use LTAP centers; use work zone clearinghouse
54(O)	Rate FHWA regions on work zone operations
5(T)	Lack of knowledge of work zone best practices
13(T)	Dissemination of information about on-going work zone activities (e.g., work zone clearinghouse, European scanning tour)
20(T)	Lack of political will to implement some innovative methods (enforcement, long-life materials)

25(T) No performance measures to assess how we are doing

28(T) No baseline to evaluate effects of changes

29(T) Current rules/ regulations (e.g., MUTCD) not known/understood by all who work on projects

40(T) Convincing policy makers about what the real issues are.

Measuring Success/Metrics

Brian Deery, Senior Director of the Highway Division of the Associated General Contractors of America, suggested that safety and mobility were competing goals and should be kept separate. Some other members said that they believe that these two issues are closely linked and can be improved concurrently. Other issues raised included the need to look at the affects on safety and delay after the construction period as well as during the period, and the need to analyze whether the right improvements in a road were made. Another participant noted that there are two things that can be controlled – the roadway itself and the work that is done to it – but there are many behavioral factors that cannot be controlled. After some initial discussion, the participants broke into two groups to discuss how to measure success and what metrics could be used. A summary of each group's discussion follows.

Group 1 Documentation

Metrics

Construction

- % contract duration overrun (# days overrun/# contract days)
- doesn't measure how good original target was
- tells how performing on schedule

Work Intensity

- avg % contract paid/month (avg intensity of project measure
- worker loading curve (monthly avg % of maximum work force)
- Incentive/disincentive clauses (only small % of contracts)

Safety

- Accidents
- Fatalities

Mobility

- Delay
- # of original lanes remaining open
- travel time (same route of work zone, alternate route, transit)
- Collect data (traffic counts) in work zone's (5 year base ADT data, collect data systematically during work zone and analyze effects)

Measures

Travel Time (EZ Pass Tech)

- % of time original capacity provided during peak hours
- speed/time to get thru the work zone

Queue Length

- Minimize total delay over life of project
- Avoid/prevent extreme delays
- Control variations in travel time/predictability
- Limit increase in travel time to x% (or level of service) – variable by time of day and day of week
- All (major) projects undergo analysis to assess delay and safety – (define major (% of traffic in area, # of vehicles, local definition)

Goal ® Objective ® Measure

Discussion of Measures

- Travel Time
- ✓ Cumulative delay (life of project and after project)
- ✓ Peak delay
- ✓ Daily delay
- Reliability
- Access – getting people where they need to go (multiple modes) → related to/part of travel time?
- Starting point: No delays/no crashes
- Maximize life cycle mobility and safety related to work zone activities per $ invested *Or* Minimize life cycle delays and crashes/fatalities related to work zone activities per $ invested
- Barrier: Short-term thinking of politicians and short-term thinking of public
- Measure public perception – is it improving (maximize public acceptance of work zones) – role of education
- Reduction of work zone fatalities/injuries (with hard numbers)

Considerations with Measures

- How quickly can we collect the data needed to assess/measure impact? What about baseline data?
- Comparability
- Ease of assessment/data collection

National Goal ® Project Level Objectives ® Measures (National? Or Project?)

Goal

- Maximize mobility and safety related to work zone activities per $ invested over life cycle/over shorter x-year period (including surrounding corridors)
- Minimize life cycle delay and crashes/fatalities

Objective: Mobility

- Minimize travel time (cumulative over life cycle)
- Minimize travel time (daily peak)
- Minimize travel time (during project
- Measures
- ✓ Categorize by rural/urban, highway/non-highway
- ✓ % increase in travel (through work zone, on alternate routes, alternate modes)
- ✓ ADT

Objective: Improve public perception and education

Objective: Safety

- Minimize fatalities
- Minimize injuries
- Minimize crashes

Objective: Significant project go through this analysis

- Measure: #/% of projects undergoing this type of analysis

Group 2 Documentation

Assumption

Projects are selected based on safety, mobility, and road conditions.

Success Indicators

1. Fewer fatalities in work zones
2. Fewer accidents/injuries in work zones
3. Fewer work zones (increased mean time between repair/reconstruction)
4. Reduced work zone duration
5. Less work-zone related delays
6. Less negative impact on adjacent property
7. Increase in recurring benefits
8. Improved public perception of work zone operation and benefit
9. Reduced negative environmental impact.

Metrics

Success Indicator	***Project Metrics***
1. Fatalities in work zones	# of deaths and rate per ?
2. Accidents/injuries in work zones	# of accidents/injuries (severity, value) and rate per ?
3. Number of work zones (increased mean time between repair/reconstruction)	- # miles of work zone/ mile of "qualified" highway - proportion of highway miles needing work zones
4. Work zone duration	- Time when traffic flow is affected - Contract duration
5. Work-zone related delays	- When and how much delay per person and aggregate (at system level) - Reliability of delay estimates
6. Impact on adjacent property	- Surveys - Days access is affected - Trade-off against improved access after work zone
7. Recurring benefits	Comprehensive life cycle cost benefit analysis
8. Public perception of work zone operation and benefit	- Complaints - Surveys
9. Environmental impact	Air quality (delayed vehicles), noise (construction equipment), water quality (construction runoff)

Potential Working Group Recommendations/Action Items

1. More analytical efforts to support decision making and accelerate current/on-going efforts (e.g. SWAT)
2. Best practices/Tech Scan – collect data to support them
3. Publish European Scanning Tour report
4. Obtain summary documentation of TRB and FHWA research related to work zones (scope of work and status report on NCHRP research projects; send info to Ann Brock at TRB)
5. Look for data on exposure (National Work Zone Safety Clearinghouse) *(partially done at the meeting)*
6. Track effectiveness of Work Zone Awareness Week (e.g., # of newspaper editorials run)
7. Distribute QuickZone info (data collection plan, manual, URL for demo) to Working Group *(partially done at the meeting)*
8. Distribute document on analytical basis for evaluations (John Conrad document)
9. Look for information on projects where public information campaigns have been effective
10. Consider having Tim Lomax, who does the TTI travel time delay report, give a presentation at the next Senior Working Group meeting.

Conclusion

Chairman Kay thanked the group members for their participation and suggested that the next meeting be held either March 14-15 or March 21-22. In the interim, the group could continue to exchange ideas via emails and possibly conference calls. A brief letter of summary on the meeting will be sent from the senior working group to FHWA.

Attachment A

Meeting Participant List
Work Zone Senior Working Group Meeting of August 23-24, 2000

Work Zone Steering Committee

Brian Deery , AGC for Richard Ashmore, CEO, Ashmore Brothers

John Conrad, Asst. Secretary, Washington DOT

Forrest Council, University of North Carolina

Jack Kay, former CEO, JHK & Associates *(Chair)*

Jim O'Conner, University of Texas

Ted Scott, Director of Highway Operations, ATA

Peter Plumeau , Executive Director, Burlington, VT MPO

T. Peter Ruane, President & CEO, ARTBA

Len Sanderson, State Hwy Administrator, North Carolina DOT

Rob Dingess, ATSSA for Roger Wentz, Executive Director, ATSSA

Tom Werner, Regional Director, New York DOT

Joe Wilkerson, Division Administrator, FHWA

Dave Willis, President & CEO, AAA Foundation

FHWA *Ex Officio* Members

Tony Kane, Executive Director, FHWA

Denny Judycki, Program Manager, RD&T Service Business Unit

Janet Coleman, Safety Core Business Unit for Bud Wright, Program Manager, Safety Core Business Unit

FHWA Mobility and Safety Product Team

Shelley Row, Operations Core Business Unit (Team Advisor)

Ken Opiela, Research, Technology & Development Service Business Unit

John Harding, Operations Core Business Unit for Raj Ghaman and Deborah Curtis, Research, Technology & Development Service Business Unit

Janet Coleman, Safety Core Business Unit *(see above)*

Mike Robinson, Safety Core Business Unit

Jerry Blanding, Operations Core Business Unit

Phil Ditzler, Operations Core Business Unit *(Team Leader)*

Other Attendees

Karl Wunderlich, Mitretek Systems

James Larkin, Mitretek Systems

Mike Smith, SAIC

Tracy Scriba, SAIC

Barbara Murdock, Barbara Murdock & Associates